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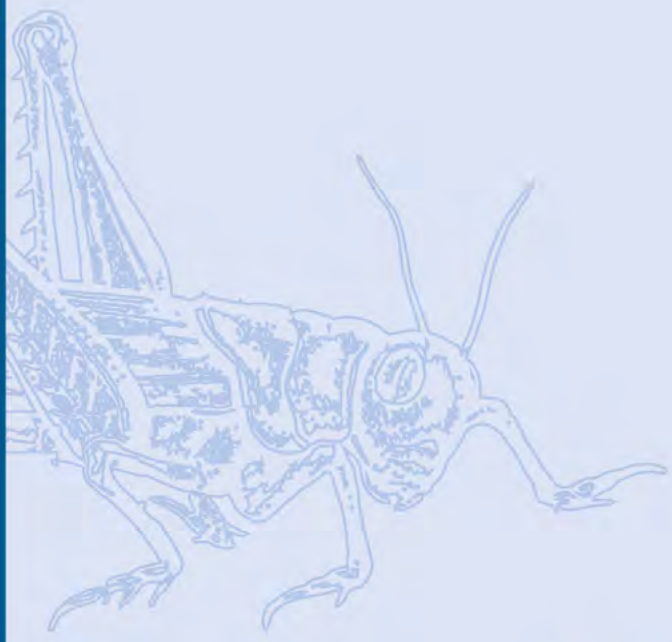

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UPDATE OF DESERT LOCUST GREGARIZATION SITES MAPPING

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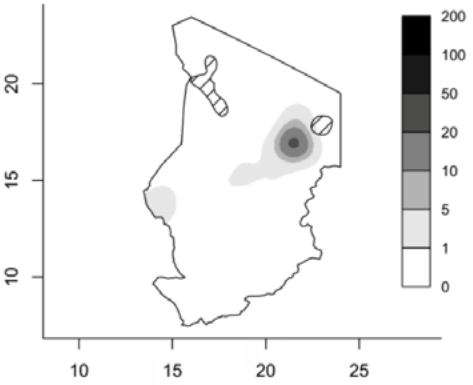
The Desert Locust is a major pest of crops and pastures. The most effective control strategy remains the preventive one. It aims to prevent invasions/upsurges by early localization and elimination of the primary outbreaking populations at gregarization sites. These sites are scattered in various parts of West, Central and Eastern Africa, the Middle East and South-West Asia. Chad, belonging to the western region, hosts some gregarization sites and is also an important route for swarms to travel from the East (Sudan, Eritrea, Somalia and Ethiopia) or the West (Niger, Mali and Mauritania). Empirical maps of Desert Locust gregarization sites in Chad were made based on reports of swarms and hopper bands during invasions/upsurges periods between 1926 and 1976, when the Tibesti region was reported as a gregarization area. Chad, like other Sahelian countries, has experienced significant climatic changes in recent decades that could have influenced the functioning and location of gregarization sites. The objective of this study is to update our knowledge on areas favorable to Desert Locust breeding and gregarization in Chad using locust information from 1965 to 1971 (only old data remaining available to date) and new data collected from 1987 to 2017 by different locust survey teams. We used a spatial smoothing method to map sites suitable for gregarization. Our study shows that there are two geographical areas where gregarization events have been recorded in our study period: i) the Kanem - Lac Chad natural region (on the West), ii) the Ennedi region (main gregarization area, on the East).

These areas are added - as gregarization areas - to the Tibesti Massif (in the far North-West) that had been identified by previous works but where little exploration/surveys were undertaken in recent years. In addition, monthly maps showing the Desert locust records frequency per square degree during the remission periods were elaborated and may be used for planning preventive control campaigns by the National Anti-Locust Control Agency (ANLA).

Figure1. Identification of gregarization sites in Chad from



survey data of 1965-1971 and 1987-2017 periods. The gray scale corresponds to the density of gregarization records per square degree. Hatched areas are gregarization sites identified in the literature from data previous to 1987.

Key Words: Desert Locust, gregarization sites, survey, Chad, preventive control, spatial smoothing.